

## Chronic Abdominal Pain: Etiology and Clinical Features in a Laparoscopic Surgery Study

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### Abstract

**Background:** Chronic abdominal pain is a persistent or intermittent discomfort in the abdominal region lasting for more than three months. It may be caused by various pathologies in different systems, including gastrointestinal, genitourinary, or gynecological, and can have either organic or functional origins. Despite the availability of advanced medical and surgical techniques, the role of diagnostic laparoscopy in evaluating chronic abdominal pain remains controversial.

**Method:** A study was conducted to evaluate the sociodemographic profile, clinical features, and etiology of chronic abdominal pain in patients undergoing diagnostic laparoscopy. A pretested questionnaire was used to collect data on the patients' age, gender, occupation, residence, socioeconomic status, and other relevant information. A detailed history and physical examination were performed, along with systemic examination to identify signs indicating an underlying etiology of abdominal pain.

All patients underwent preoperative evaluations, including ultrasonography, erect abdominal X-ray, CT scan, MRI, and routine blood investigation, to identify the cause of their abdominal pain. Diagnostic laparoscopy was performed when the diagnosis was uncertain.

**Results:** The study found that the mean age of patients with chronic abdominal pain was  $38.99 \pm 18.61$  years, with the highest number of cases occurring in the 21 to 30 years age group, followed by those in the less than 20 and 31 to 40 years age groups. A small percentage of cases were found in patients aged over 70 years. Females accounted for 52.8% of cases, indicating a slight female predominance.

The most commonly observed features in patients with chronic abdominal pain were free fluid, abdominal pain, weight loss, and anorexia. Vomiting and a doughy abdomen were less frequently observed. The study found that tuberculosis was the most common cause of chronic abdominal pain, accounting for 62.5% of cases, while malignancy was found in 30.6% of cases. A diagnosis could not be made in 6.9% of cases. The mean age of patients with tuberculosis was  $29.93 \pm 12.82$  years, while those with malignancy had a mean age of  $56.73 \pm 14.02$  years. The majority of cases of chronic abdominal pain associated with tuberculosis occurred in younger age groups, whereas a higher proportion of cases with malignancy were in elderly age groups.

**Conclusion:** The study emphasizes the importance of diagnostic laparoscopy in managing chronic abdominal pain and reducing the financial burden on patients. It highlights the association of abdominal distension with malignancy and a doughy abdomen with tuberculosis. With advancements in surgical techniques and instrumentation, diagnostic laparoscopy has become an integral part of surgical procedures and can improve patient outcomes by avoiding expensive,

time-consuming, and potentially complicated surgical procedures. Overall, this study provides valuable insights into the etiology and management of chronic abdominal pain.

**Keywords:** Chronic Abdominal Pain, Laparoscopic Surgery, Clinical Features.

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## Introduction

In the field of surgical practice, abdominal pain is a frequently observed symptom that often points to an underlying abdominal pathology [1]. The term "chronic abdominal pain" refers to any type of pain or discomfort in the abdominal area that persists for more than three months [2]. The origin of such pain may be linked to either biological or functional factors and may arise from any system, such as the gastrointestinal, genitourinary, or gynecological systems, among others. Organic disorders such as postoperative internal adhesions, abdominal tuberculosis, appendicular pathology, mesenteric lymphadenopathy, biliary etiologies, and hernias are a few examples of conditions that are associated with persistent abdominal discomfort. Functional reasons for ongoing stomach discomfort may include irritable bowel syndrome, dyspepsia, and motility issues. [3].

Chronic abdominal discomfort is the fourth most common reason for seeking surgical therapy and the leading cause for referral to a gastroenterologist. It accounts for 13% of all surgical hospitalizations. In most cases, routine examinations such as abdominal X-ray, ultrasonography, CECT abdomen, MRI, and endoscopy can aid in establishing an accurate diagnosis. However, despite extensive testing, the underlying cause of approximately 40% of cases remains uncertain. In the past, exploratory laparotomy was the preferred surgical intervention in such situations, but it was associated with various complications including wound dehiscence, wound infection, hemorrhage, incisional hernia, injury to underlying tissues, and unsatisfactory cosmetic results [4].

The advent of laparoscopic procedures has revolutionized the field of surgery. Laparoscopy has the ability to perform both diagnostic and therapeutic interventions. Laparoscopic surgery offers numerous benefits, such as being minimally invasive, allowing for rapid recovery and return to normal activities, providing satisfactory cosmetic results, and reducing patient morbidity and suffering [5]. Diagnostic laparoscopy facilitates direct visualization of the abdomen and its organs, and enables the collection of biopsy specimens (as needed) and the retrieval of specimens or aspirates for culture. Additionally, diagnostic laparoscopy may be utilized in conducting laparoscopic ultrasound [6]. With the advancement in surgical techniques, improvement in instrumentation, and experience of treating surgeon, diagnostic laparoscopy is no longer considered a procedure only for visualization. Instead, this procedure can be utilized in the identification of any abnormal findings and improving the outcome of the patient. The procedure allows the treating surgeon to treat the pathology during the diagnostic procedure itself and thus decrease the need for unwanted laparotomy and its associated side effects [7].

Diagnostic laparoscopy has become an integral part of the surgical procedure in patients with chronic abdominal pain for accurate diagnosis of underlying pathology, the cause of which remains uncertain even after exquisite investigations. This approach enables the assessment of abdominal tuberculosis, liver disorders such as discrete masses and portal hypertension, intra-abdominal cancers, as well as congenital

defects. The absolute contraindications for diagnostic laparoscopy include bleeding disorders, coagulation defects, and major respiratory and cardiac disorders [7].

Diagnostic laparoscopy offers better patient outcomes by avoiding expensive, time-consuming, and potentially more complex surgical interventions, thus reducing the overall treatment cost. Despite advancements in medical and surgical techniques, some researchers still question the usefulness of diagnostic laparoscopy in diagnosing chronic abdominal discomfort.

As diagnostic laparoscopy is minimally invasive surgery and the advanced laparoscope is helpful in easy visualization of almost every aspect of the abdominal cavity, its success largely depends upon the skill, training, and expertise of the surgeon [7].

### Methodology

This study is a prospective interventional study. Study area and population: The study was conducted at the Outpatients and Inpatient Department of Surgery, People's College of Medical Sciences and Research Centre, People's Hospital, Bhopal. The study population included all patients with chronic abdominal pain who were admitted to the General Surgery department of People's Hospital associated with PCMS and RC, Bhopal (M.P.) during the 24-month study period from September 1, 2019 to August 30, 2021. The patients were selected using purposive sampling.

**Inclusion and exclusion criteria:** The inclusion criteria for the study were patients with chronic abdominal pain when the diagnosis was uncertain after laboratory and non-invasive investigations and imaging techniques involving USG, CT scan, etc., Individuals with unclear causes of ascites and

those experiencing recurrent subacute intestinal obstruction were included in the study. Patients with acute bowel obstruction and perforated viscus, those with contraindications for pneumoperitoneum or general anesthesia, those with uncorrectable coagulopathies, patients with abdominal wall infections, those with chronic abdominal pain who refused to undergo diagnostic laparoscopy, patients meeting classical diagnostic criteria for irritable bowel syndrome, and patients with gynecological causes of chronic abdominal pain were excluded from the study.

Prior to the study, written consent was obtained from the patients' guardians, who were informed about the nature and purpose of the study, and were assured that confidentiality would be maintained.

### Methodology

After obtaining ethical clearance from the Institute's ethical committee, all the eligible patients were enrolled in the study, and data regarding their sociodemographic profile such as age, gender, occupation, residence, socioeconomic status, etc., was collected using a pretested questionnaire. A comprehensive abdominal discomfort history was obtained and documented, including details on duration, onset, nature, and location. Additionally, all patients underwent a detailed physical and general examination, with a systemic examination performed to collect any indications of underlying causes associated with stomach discomfort.

Before the surgical procedure, all patients were evaluated with an ultrasound scan of the entire abdomen, an erect abdominal X-ray, a CT scan, an MRI, and a standard blood test. Diagnostic laparoscopy was performed if the diagnosis remained uncertain after these tests.

## Results

The study was conducted on a total of 72 cases who presented with chronic abdominal pain at our hospital.

**Table 1: Distribution according to age**

Age (years)	Frequency (n=72)	Percentage
≤ 20	14	19.4
21 – 30	15	20.8
31 – 40	14	19.4
41 – 50	11	15.3
51 – 60	7	9.7
61 – 70	6	8.3
>70	5	6.9
Mean	38.99±18.6	

**Table 2: Distribution according to gender**

Gender	Frequency (n=72)	Percentage
Male	34	47.2
Female	38	52.8

**Table 3: Distribution according to clinical features**

Clinical features	Frequency (n=72)	Percentage
Abdominal pain	42	58.3
Anorexia	34	47.2
Vomiting	16	22.2
Fever	23	31.9
Loss of weight	37	51.4
Distended abdomen	34	47.2
Lump in abdomen	30	41.7
Tenderness	31	43.1
Doughy abdomen	17	23.6
Free fluid	48	66.7

**Table 4: Distribution according to diagnosis**

Diagnosis	Frequency (n=72)	Percentage
Malignancy	22	30.6
Tuberculosis	45	62.5
Not diagnosed	5	6.9

**Table 5: Association of age with diagnosis**

Age	Diagnosis		
	TB (n=45)	Malignancy(n=22)	Not diagnosed (n=5)
≤ 20	13 (28.9)	0 (0)	1 (20.0)
21 – 30	14 (31.1)	0 (0)	1 (20.0)
31 – 40	9 (20.0)	5 (22.7)	0 (0)
41 – 50	5 (11.1)	4 (18.2)	2 (40.0)
51 – 60	4 (8.9)	3 (13.6)	0 (0)

61 – 70	0 (0)	6 (27.3)	0 (0)
>70	0 (0)	4 (18.2)	1 (20.0)
Mean	29.93± 12.82	56.73± 14.02	42.40± 25.16
X <sup>2</sup>	39.79		
P value	0.001		

**Table 6: Association between gender and diagnosis**

Gender	Diagnosis		
	TB (n=45)	Malignancy (n=22)(n=5)	Not diagnosed
Male	19 (42.2)	12 (54.5)	3 (60.0)
Female	26 (57.8)	10 (45.5)	2 (40.0)
χ <sup>2</sup>	1.25		
P value	0.535		

**Table 7: Association between clinical features and diagnosis**

Clinical features	Diagnosis			χ <sup>2</sup>	P value
	TB (n=45)	Malignancy (n=22)	Not diagnosed (n=5)		
Abdominalpain	24 (53.3)	14 (63.6)	4 (80.0)	1.68	0.43
Anorexia	25 (55.6)	7 (31.8)	2 (40.0)	3.45	0.17
Vomiting	10 (22.2)	6 (27.3)	0 (0)	1.75	0.41
Fever	15 (33.3)	7 (31.8)	1 (20.0)	0.36	0.83
Loss of weight	20 (44.4)	14 (63.6)	3 (60.0)	2.33	0.31
Distendedabdomen	18 (40.0)	15 (68.2)	1 (20.0)	6.30	<b>0.043</b>
Lump in abdomen	18 (40.0)	11 (50.0)	1 (20.0)	1.64	0.43
Tenderness	23 (51.1)	7 (31.8)	1 (20.0)	3.40	0.18
Doughy abdomen	16 (35.6)	0 (0)	1 (20.0)	10.39	<b>0.006</b>
Free fluid	28 (62.2)	16 (72.7)	4 (80.0)	1.16	0.55

The mean age of patients experiencing chronic abdominal pain was 38.99 ± 18.61 years, with the highest proportion of cases (20.8%) falling within the age range of 21 to 30 years, followed by 19.4% of cases belonging to both the less than 20 and 31 to 40 years age groups. Only a small proportion of cases (6.9%) were aged over 70 years (Table 1).

Females accounted for 52.8% of cases with chronic abdominal pain, with males representing the remaining 47.2%. This indicates a slight female predominance, with a male to female ratio of 0.89:1 (Table 2). The most commonly observed features in patients with chronic abdominal pain were

free fluid (66.7%), abdominal pain (58.3%), weight loss (51.4%), and anorexia (47.2%).

Vomiting and a doughy abdomen were less frequently observed, occurring in approximately one quarter of cases (Table 3). In this study, tuberculosis was diagnosed in 62.5% of cases, while chronic abdominal pain was found to be secondary to malignancy in 30.6% of cases. A diagnosis could not be made in 6.9% of cases (Table 4).

Patients with tuberculosis had a mean age of 29.93 ± 12.82 years, while those with malignancy had a mean age of 56.73 ± 14.02 years. The majority of cases of chronic abdominal pain associated with tuberculosis occurred in younger age groups, whereas a

higher proportion of cases with malignancy were in elderly age groups. This difference in age composition between cases with tuberculosis and malignancy was statistically significant ( $p < 0.05$ ) (Table 5).

Although males accounted for the majority of cases with malignancy and females for the majority of cases with tuberculosis, the difference in gender composition between the two groups was not statistically significant ( $p > 0.05$ ) (Table 6).

Abdominal distension was found to be significantly associated with malignancy, while a doughy abdomen was significantly associated with tuberculosis ( $p < 0.05$ ) (Table 7) in this study.

## Discussion

In the realm of minimally invasive surgeries, laparoscopic procedures have emerged as a versatile tool for both diagnosis and treatment. Compared to traditional open surgeries, laparoscopy offers several benefits, such as faster recovery times, improved cosmetic outcomes, and lower rates of complications [5-9].

Our study focused on chronic abdominal pain and found that tuberculosis was the most common underlying cause in 62.5% of cases, while malignancy accounted for 30.6%. In the remaining 6.9%, the diagnosis was inconclusive. These findings align with previous research that identified abdominal tuberculosis as a primary cause of chronic abdominal pain [7,10]. We also analyzed the age and gender distribution of patients with chronic abdominal pain. Our study found that the average age of patients was  $38.99 \pm 18.61$  years, with the majority falling within the 21-40 age group (40.2%). Only a small proportion of cases were seen in elderly patients (>60 years), comprising just 15.1% of the total. These findings are consistent with earlier studies, which similarly observed a higher incidence of chronic abdominal pain

in younger age groups [6,11]. Interestingly, we observed that the proportion of male and female patients with chronic abdominal pain was roughly equal, which is in line with other studies [10,12,13].

Clinical features associated with chronic abdominal pain included the presence of free fluid (66.7% of cases), weight loss (51.4%), anorexia (47.2%), abdominal distension (47.2%), abdominal tenderness (43.1%), and fever (31.9%). We found that abdominal distension was significantly associated with malignancy, while a doughy abdomen was more strongly associated with tuberculosis ( $p < 0.05$ ). Other studies have similarly noted the association between abdominal tuberculosis and symptoms such as abdominal pain and ascites [14], as well as generalized abdominal tenderness and weakness [15].

## Conclusion

The study highlights the role of diagnostic laparoscopy as an effective and minimally invasive tool for accurate diagnosis of underlying pathology in patients with chronic abdominal pain. This procedure enables direct visualization of the abdomen and its organs, helps in obtaining biopsy specimens and cultures, and can be used for both diagnostic and therapeutic purposes. With advancements in surgical techniques and instrumentation, diagnostic laparoscopy has become an integral part of surgical procedures and can improve patient outcomes by avoiding expensive, time-consuming, and potentially complicated surgical procedures. Overall, the study emphasizes the importance of diagnostic laparoscopy in the management of chronic abdominal pain and reducing the financial burden on patients. Abdominal distension was found to be significantly associated with malignancy, while a doughy abdomen was significantly associated with tuberculosis

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